

MSC Guidelines for Review of Inland Tank Barge Stability (intact/damage), Lightship, and Special Loading Authorization

Procedure Number: T1-13

Revision Date: 01/13/00

References

- a. 46 CFR 170, Stability Requirements for all Inspected Vessels
 - b. NVIC 17-91, Guidelines for Conducting Stability Tests
 - c. ASTM F 1321-92, Standard Guide for Conducting a Stability Test (Inclining and Lightweight Survey) to Determine the Light Ship Displacement and Centers of Gravity of a Vessel
 - d. 33 CFR 2.05-20 & 151.05, Inland and Oceangoing Definitions
 - e. 46 CFR 30, Subchapter D, Tank Vessels
 - f. 46 CFR 90, Subchapter I, Cargo and Misc. Vessels
 - g. 46 CFR 151, Barges Carrying Bulk Liquid Hazardous Material Cargoes
 - h. 46 CFR 172, Subpart C, Special Rules Pertaining to a Barge That Carries a Cargo Regulated Under Subchapter D
 - i. 46 CFR 172, Subpart D, Special Rules Pertaining to a Vessel That Carries a Cargo Regulated Under 33 CFR Part 157
 - j. 46 CFR 172, Subpart E, Special Rules Pertaining to a Barge That Carries a Hazardous Liquid Regulated Under Subchapter O
 - k. Marine Safety Manual, Volume IV, Chapter 6
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Disclaimer

These guidelines were developed by the Marine Safety Center staff as an aid in the preparation and review of vessel plans and submissions. They were developed to supplement existing guidance. They are not intended to substitute or replace laws, regulations, or other official Coast Guard policy documents. The responsibility to demonstrate compliance with all applicable laws and regulations still rests with the plan submitter. The Coast Guard and the U. S. Department of Transportation expressly disclaim liability resulting from the use of this document.

Contact Information

If you have any questions or comments concerning this document, please contact the Marine Safety Center by e-mail or phone. Please refer to the Procedure Number: **T1-13**

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General Review Guidance

- Note: Verify that the subject vessel is designed for operation as an Inland Tank Barge. *See definition of Inland Routes.
- If the vessel is new and not a sister vessel, has the Application for Inspection been submitted? In general, no plan review will occur until receipt of a copy of the Application.
- Is it clearly stated what is desired from the MSC? Are all plans requiring Coast Guard review and/or approval submitted in triplicate? Are there any special or unusual requests involved?
- Verify Lightweight Characteristics utilizing one of the following methods:
 - 1) Does a sister vessel, with known characteristics, exist?
 - 2) Has a detailed estimate of the characteristics been provided by the owner/designer?
 - 3) Has an approved procedure and subsequent deadweight/stability test been performed in accordance with references (a), (b), and (c)?
- Ensure the following drawings (items) are submitted:
 - General Arrangements
 - Lines, offsets, or computer disk with hull model
 - Tank Capacity Tables\Plan
 - Hydrostatic Tables
 - Intact calculations
 - Damage Stability calculations, as applicable
- For a barge regulated under 46 CFR **Subchapter D**, the stability requirements in 46 CFR Subchapter S **do not** apply if all of the following conditions are satisfied (46 CFR 170.170(b)(4)):
 - The barge operates only in rivers or lakes, bays, and sounds service
 - Does not have to meet 33 CFR part 157, subpart B (OPA 90)
 - Only carries a cargo listed in 46 CFR 30.25-1

*If the answer is **yes to all** of the **above**, then **no** stability review is required, unless the OCMI questions the stability of the vessel, in which case the following guidance is applicable.

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Note: Additional guidance used by the OCMI to determine if the barge requires a stability review poses the following questions (found in reference (k), E.5.b.(2)):

- Is all cargo carried below the main deck (i.e. no deck cargo)?
- Does the barge have an oiltight or watertight centerline bulkhead in way of cargo compartments?
- Does the barge carry no more than 1/3 of the tank pairs slack?
- Does the barge have a draft-to-depth ratio no greater than 0.85?

- For a barge regulated under 46 CFR **Subchapter D only**
 - Verify compliance with the intact righting energy requirements in 46 CFR 174.015, applying 5 ft-degrees for river service and 10 ft-degrees for lakes, bays, and sounds service. [See reference (k) Part E.5.b(1)]
 - * Note: 33 CFR 157.08(h) exempts an inland barge from the OPA 90 damage stability requirements.

- For a barge regulated under 46 CFR **Subchapter O** (Subchapter D or I may also apply),
 - Verify that the intact transverse stability requirements have been met, 46 CFR 172.090.
 - Verify that the intact longitudinal stability requirements have been met, 46 CFR 172.095.
 - Verify that the watertight integrity is maintained, 46 CFR 172.095. (Type I and II only)
 - Verify the character of damage applicable for the hull type, 46 CFR 172.104. (Type I and II only)
 - Verify the extent of damage, 46 CFR 172.105. (Type I and II only)
 - Verify the survival conditions are achieved, 46 CFR 172.110. (Type I and II only)

- Per 46 CFR 31.10-32, if the barge was constructed after September 6, 1977 and is greater than 300 feet in length, ensure that a loading manual is submitted in accordance with 46 CFR 42.15-1(a) or 45.105(a).

- If a barge is seeking a one time voyage Special Loading Authorization (SLA), ensure that calculations are submitted which comply with the applicable requirements.

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- The MSC may construct a computer hull model from the lines, offsets, or provided disk, and independently verify the stability of the vessel using the computer model.
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Definitions

Inland Routes: Inland routes may include vessel service on lakes, bays, sounds, rivers, and protected coastwise routes, including “special service voyages” and “limited coastwise, fair weather only.” Inland waters are defined in 33 CFR 2.05-20 and are shoreward of the Boundary Line. Operation on the Great Lakes is not considered an inland route, unless specified in fair weather definition. Definitions for these terms can be found in the following sources:

Rivers:	46 CFR 30.10-61
Lakes, Bays, and Sounds:	46 CFR 30.10-41
Great Lakes:	46 CFR 30.10-33
Ocean:	46 CFR 30.10-45
Coastwise:	46 CFR 30.10-11
Special service voyages:	MSM, Volume IV, Chapter 6, Part F.3.g
Fair weather voyages:	MSM, Volume IV, Chapter 6, Part F.3.i

Downflooding Point: The lowest opening on a vessel that allows the entry of seawater into the hull or superstructure of an undamaged vessel due to heel, trim, or submergence of the vessel.

Attachments

- Tank Vessel Stability Matrix
- Inland Tankbarge Stability Flowchart